63D CONGRESS, 2d Session. } HOUSE OF REPRESENTATIVES. { DOCUMENT No. 1022.

MOREHEAD CITY HARBOR, N. C.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING,

WITH A LETTER FROM THE CHIEF OF ENGINEERS, REPORTS ON PRELIMINARY EXAMINATION AND SURVEY OF HARBOR AT MOREHEAD CITY, N. C., WITH A VIEW TO EXTENDING THE PRESENT PROJECT WESTERLY TO THE MAIN CHANNEL OF BOGUE SOUND AND TO WIDENING THE CHANNEL IN FRONT OF THE WHARVES SO AS TO PROVIDE A TURNING BASIN OF ADEQUATE AREA.

JUNE 8, 1914.—Referred to the Committee on Rivers and Harbors and ordered to be printed, with illustration.

WAR DEPARTMENT,
Washington, June 5, 1914.

The SPEAKER OF THE HOUSE OF REPRESENTATIVES.

SIR: I have the honor to transmit herewith a letter from the Chief of Engineers United States Army, dated 4th instant, together with copies of reports from Maj. H. W. Stickle, Corps of Engineers, dated February 14, 1913, and February 12, 1914, with map, on preliminary examination and survey, respectively, of harbor at Morehead City, N. C., made by him in compliance with the provisions of the river and harbor act approved July 25, 1912.

Very respectfully,

LINDLEY M. GARRISON,
Secretary of War.

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF ENGINEERS,
Washington, June 4, 1914.

From: The Chief of Engineers, United States Army.
To: The Secretary of War.
Subject: Preliminary examination and survey of harbor at Morehead City, N. C.

1. There are submitted herewith, for transmission to Congress, reports dated February 14, 1913, and February 12, 1914, with map, by Maj. H. W. Stickle, Corps of Engineers, on preliminary examina-

tion and survey, respectively, authorized by the following item contained in the river and harbor act approved July 25, 1912:

Harbor at Morehead City, North Carolina, with a view to extending the present project westerly to the main channel of Bogue Sound and to widening the channel in front of the wharves so as to provide a turning basin of adequate area.

2. Morehead City is located on the northern shore of Bogue Sound, about 4 miles from Beaufort Inlet. The main channel of Bogue Sound, having a depth of 12 feet and more at this place, runs to the southward of a small island or marsh and is about one-half mile from the water front of the town. The present and only project for improvement, adopted by the river and harbor act of June 25, 1910, provides for dredging a channel 10 feet deep at mean low water, beginning at a point 2,000 feet westward of Beaufort Harbor and extending westward up along the wharves at Morehead City for a distance of 3,800 feet, the lower 2,800 feet having a width of 100 feet and the upper 1,000 feet a width of 200 feet. This project has been completed. The improvements now desired, as indicated by the act, are the extension of this channel westerly to the main channel of Bogue Sound and the widening of the channel in front of the wharves, the latter improvement being asked in order to provide space for anchorage purposes. The district officer is of opinion that the locality is worthy of further improvement by the United States to the extent of dredging the desired westerly channel to a depth of 6 feet, widening the channel along the wharves to provide an anchorage basin 400 feet wide and about 1,600 feet long and constructing a dredge suitable for this and other work in his district, the total estimated cost of this project, including $63,000 for the proposed dredge being $91,000. The division engineer expresses the opinion that the improvement proposed is not worthy of being undertaken by the General Government at this time.

3. These reports have been referred, as required by law, to the Board of Engineers for Rivers and Harbors, and attention is invited to its report herewith, dated May 19, 1914, concurring in the unfavorable views of the division engineer.

4. After due consideration of the above-mentioned reports, I concur with the views of the division engineer and the Board of Engineers for Rivers and Harbors, and therefore report that the further improvement by the United States of the harbor at Morehead City, N. C., with a view to extending the present project westerly to the main channel of Bogue Sound and to widening the channel in front of the wharves so as to provide a turning basin of adequate area is not deemed advisable at the present time.

DAN C. KINGMAN,
Chief of Engineers United States Army.

REPORT OF THE BOARD OF ENGINEERS FOR RIVERS AND HARBORS ON SURVEY.

[Third indorsement.]

BOARD OF ENGINEERS FOR RIVERS AND HARBORS,
May 19, 1914.

To the CHIEF OF ENGINEERS, UNITED STATES ARMY.

1. The existing project for Morehead City Harbor, now practically completed, provides for an entrance channel 100 feet wide and 10 feet

deep at mean low water and a basin in front of Morehead City of the same depth and 200 feet wide with a length of 1,000 feet. The range of tide is about 3 feet. Morehead City has a population of about 2,250.

2. The principal industry is catching and shipping fish, oysters, and crabs, the field of operations including Bogue Sound, Core Sound, and a part of Pamlico Sound. The commerce appears to have been increasing and is reported for the year 1912 as amounting to 15,487 tons, having a value of approximately $973,000.

3. The present investigation has been called for "with a view to extending the present project westerly to the main channel of Bogue Sound, and to widening the channel in front of the wharves so as to provide a turning basin of adequate area." The extension of the project so as to connect with Bogue Sound is desired with a view to facilitating commerce between Morehead City and the New River country which now has to be carried through the present channel of entrance, necessitating a detour of about one to one and a half miles. It is also desired to place Morehead City directly on the route of vessels engaged in traffic between Bogue Sound and Newbern, and there are three fish factories and a lumber mill about 2 miles west of Morehead City engaged in commerce with that port which would be benefited by a direct connection between Bogue Sound and the present Morehead City basin. The widening of the channel in front of the wharves is desired in order to increase the anchorage facilities for the small craft engaged in business at this port, and to enable boats to turn more conveniently, it being claimed that the present space is inadequate. Local interests are reported to have expended about $4,500 for dredging and $40,000 in bulkhead construction in the past two years, this being considered as cooperation in the general improvement of the harbor.

4. The results of the district officer's investigation in connection with the preliminary examination led him to recommend an estimate looking toward an enlargement of the anchorage basin and an extension of the channel. The division engineer did not concur in this recommendation.

5. The board was not convinced of the advisability of additional improvement, and interested parties were so informed and given an opportunity of submitting their views. This resulted in a hearing before the board on April 28, 1913, which was attended by a committee from the locality.

6. As a result of the evidence presented the board recommended an estimate in order to determine the extent and advisability of improvement. A plan is presented by the district officer for an enlargement of the basin by extending it some distance to the west and making it 400 feet wide, the depth to be 10 feet at mean low water to correspond with the depth of the present basin, and for a channel connecting with Bogue Sound 100 feet wide and either 3 feet or 6 feet in depth. In order to do the work satisfactorily the district officer recommends the purchase of a dredge to be used on this and other work in his district. The estimated cost of the improvement is $22,000 for the anchorage basin, $1,250 for the channel 3 feet deep, and $6,000 for the channel 6 feet deep, making the combined estimate $23,400 for the basin and the 3-foot channel and

$28,000 for the basin and the 6-foot channel. The estimate for maintenance is $2,000. The district officer is of opinion that the locality is worthy of further improvement to the extent of providing the basin and the 6-foot channel, together with the purchase of a dredge, at a total estimated cost of $91,000. The division engineer does not concur in this view.

7. After a study of the results of the survey the board was still unconvinced of the advisability of the improvement, and interested parties were so informed. Another hearing was given in the office of the board on May 5, 1914, which was attended by Hon. John M. Faison, M. C., Hon. John H. Small, M. C., and a delegation of citizens from the locality.

8. In the early stages of this investigation it appeared from statements made by parties in interest that the enlargement of the basin was desired partly to afford better facilities for turning, but primarily to secure a more commodious anchorage area. In its notice to interested parties the board stated that it did not believe the United States would be justified in constructing an artificial basin of sufficient capacity to permit a large fleet of small boats to lie at anchor in this harbor. It was stated at the second hearing that those interested realized this fact and that they would not ask the enlargement for this purpose, but on account of its merit as an aid in turning vessels, it being claimed that difficulty had been experienced with some of the larger ones. The board has given careful consideration to this phase of the subject, and it does not believe that resulting benefits would be sufficient to justify the United States in making the considerable expenditure proposed for better turning facilities. A very large majority of the vessels using this port are quite small and can be turned easily in the basin already provided. The few large ones can be turned with the use of proper facilities and the exercise of due care.

9. The extension of the present project westerly to the main channel of Bogue Sound is desired to afford a more direct route for vessels engaged in traffic between the sound and Morehead City and better connection with the section of country west of Morehead City, where there are some commercial developments, and to permit vessels plying between the Bogue Sound country and Newbern and other points to the north to stop at Morehead City without making the detour of a mile and a half or two miles required at present. There is now a good channel connecting the inland waterway with Bogue Sound, and if the business offered is sufficient, vessels can readily make Morehead Harbor, although with some loss of time. Morehead City would receive some direct benefit from the proposed improvement, but in the opinion of the board these benefits would not be sufficiently far-reaching to warrant the improvement at the expense of the general public.

10. In view of the foregoing, the board concurs with the division engineer and reports that in its opinion it is not advisable for the United States to undertake any additional improvement of Morehead City Harbor at the present time.

11. In compliance with law, the board reports that there are no questions of terminal facilities, water power, or other subjects which could be coordinated with the project proposed in such manner as

to render the improvement advisable in the interests of commerce and navigation.

For the board:

W. M. BLACK,
Colonel, Corps of Engineers,
Senior Member of the Board.

PRELIMINARY EXAMINATION OF MOREHEAD CITY HARBOR, N. C.

WAR DEPARTMENT,
UNITED STATES ENGINEER OFFICE,
Wilmington, N. C., February 14, 1913.

From: The District Engineer Officer.
To: The Chief of Engineers, United States Army.
(Through the Division Engineer.)
Subject: Preliminary examination of harbor at Morehead City, N. C.

1. This is a report upon the preliminary examination of harbor at Morehead City, N. C., with a view to extending the present project westerly to the main channel of Bogue Sound, and to widening the channel in front of the wharves so as to provide a turning basin of adequate area, provision for which report was made in river and harbor act approved July 25, 1912. The duty of making this preliminary examination was assigned to this office by department letter of August 3, 1912.

2. Bogue Sound is a shallow sheet of water lying to the westward of Beaufort Inlet, being that part of the inland system of sounds between the inlet and Bogue Inlet. It is about 40 miles long and averages 4 to 6 miles wide. Its depth varies from about 15 feet near Beaufort Inlet to 3 feet near its central portion.

3. Morehead City is located on the northern shore of Bogue Sound about 1 mile west of the point where it communicates with the waters of Beaufort Harbor and about 4 miles from Beaufort Inlet. The main channel of Bogue Sound, having a depth of 12 feet and more at this place, runs to the southward of a small island or marsh, and is about one-half mile from the water front of the town. It has railroad communication by the Norfolk & Southern Railroad with Beaufort, N. C., to the east, and with Newbern, N. C., to the west. It is a city of about 2,250 inhabitants, about 95 per cent of whom are said to obtain their living from the waters and its produce. Among them are many owners of gasoline launches which vary in size and draft with the character of the business on which they are engaged.

4. The improvement outlined as plan No. 1 in House Document No. 649, Sixty-first Congress, second session, has been completed, and affords an entrance to the water front from the eastward. This work has provided a channel 100 feet wide to the town and 200 feet wide in front of part of the town, all of the dredging being carried to a depth of 10 feet. The new basin is separated from deep water in front of Morehead City by mud flats, on the outer portion of which there is a considerable growth of marine marsh.

5. The principal industry of the town is catching and shipping fish, oysters, and crabs. Fish are caught from as far north as Hatteras and from as far south as Topsail Inlet, and brought to Morehead City

for shipment. The oyster boats range over the same territory, and bring their loads to Morehead City for shipment. These commodities require careful handling and quick shipment, especially as the small boats in which they are gathered are usually without facilities for keeping them iced.

6. The following is a statement of commerce for the harbor of Morehead City for the calendar years 1910 and 1911, the statistics for 1912 not being available at present:

Vessel classification.

Classes.	1910			1911			Gain, 1911.		
	Number.	Net registered tonnage.	Passengers.	Number.	Net registered tonnage.	Passengers.	Number.	Net registered tonnage.	Passengers.
American registered:									
Sailing	8	100	.....	22	211	.....	14	111	.....
Gasoline	20	220	4,000	27	322	5,000	7	112	1,000
Total	28	320	4,000	49	533	5,000	21	223	1,000

Freight traffic.

INBOUND.

Articles.	Amount in customary units.				Amount in short tons.		Valuation.		Gain, 1911.
	1910	Units.	1911	Units.	1910	1911	1910	1911	
Clams	21,000	Bushels	13,750	Bushels	1,050	687.5	$21,000	$13,750	— $7,250
Crabs, soft	35,000	Dozen	20,000	Dozen	70	40	35,000	20,000	— 15,000
Eggs	120	Crates	100	Crates	3	2.5	1,200	1,000	— 200
Fish, fresh	36,000	Boxes	46,748	Boxes	3,600	4,674.8	288,000	467,480	+179,480
Fish, salt	.....	.....	6,907	Barrels	.....	335.45	.....	33,545	+ 33,545
General merchandise.	50	Tons	730	Tons	50	730	7,500	109,500	+102,000
Lumber	50,000	Feet	100,000	Feet	100	200	1,000	2,000	+ 1,000
Oysters	3,000	Bushels	9,375	Bushels	120	375	3,000	7,500	+ 4,500
Poultry	5,000	Head	6,000	Head	10	12	3,000	2,400	— 600
Salt	.....	.....	200	Tons	.....	200	.....	1,800	+ 1,800
Watermelons	.....	.....	10,000	.....	.....	100	.....	1,500	+ 1,500
Wood	850	Cords	650	Cords	850	650	3,400	2,600	— 800
Total	.....	.....	.....	.....	5,853	8,007.25	363,100	663,075	+299,975

OUTBOUND.

General merchandise.	350	Tons	587	Tons	350	587	$52,500	$88,050	+$35,550
Ice	300	...do	400	...do	300	400	3,000	2,800	— 200
Machinery	10	...do	25	...do	10	25	1,000	2,500	+ 1,500
Total	.....	.....	.....	.....	660	1,012	56,500	93,350	+ 36,850

RECAPITULATION.

Total inbound	.....	.....	.....	.....	5,853	8,007.25	$363,100	$663,075	+$299,975
Total outbound	.....	.....	.....	.....	660	1,012	56,500	93,350	+ 36,850
Total commerce.	.....	.....	.....	.....	6,513	9,019.25	419,600	756,425	+ 336,825

7. During the year 1911 two water transportation lines were established—one between Morehead City and Beaufort and Norfolk, and one between Morehead City and Swansboro. The effect of the improvement recently completed is not thoroughly developed, but from the number and size of vessels now to be seen at Morehead City it is apparent that the commerce of this harbor has undergone a substantial increase due to the improvement.

8. The average rise and fall of the tide is about 3 feet, though storm tides as high as 5 and 6 feet have been known. The material to be removed consists of sand and shells mixed in a proportion favorable for hydraulic dredging.

9. The only previous examination of this locality, with a view to improvement, was reported on by this office April 19, 1909. The improvement which has been completed was based on a survey which followed.

10. The locality and conditions are shown on map [1] prepared in 1908, corrected in September, 1912, after completion of dredging.

11. A hearing was held at Morehead City in connection with this preliminary examination on October 12, 1912. It was attended by 31 parties locally interested. Record [1] of hearing is herewith.

12. Those interested desire the execution of two distinct projects, as follows:

(*a*) Extending the present project westerly to the main channel of Bogue Sound. The reason advanced in favor of this improvement is to make Morehead City a point of call for through commerce between the North and the South.

A large percentage of the commerce on the waterway between Beaufort Harbor and New River comes to Morehead City and is compelled to use this eastern entrance. It is desired to have a western entrance, as it would save about 1 mile of distance for eastbound commerce terminating at Morehead City, or 1½ miles for the other boats running from Swansboro to Newbern, in calling there.

There are only about 2 feet of water at the end of the present 10-foot channel, and a rapid deterioration is expected. Should a western connection be made from this point to the main channel of Bogue Sound it is probable that a stronger tidal current would be induced through the present channel, and by its scouring action assist in its maintenance. This action could be made more pronounced by depositing the excavated material to the southward, to form a sort of retaining wall.

There are at present six boats running between points west of Morehead City to Newbern, N. C., making the round trip each week. It is stated that one other boat of larger capacity is to be put on this line within a short time. The proposed extension would develop a practicable competition with the railroad, rendering probable a reduction in freight rates of 25 per cent or more, as has already been shown on some lines of merchandise. The boats do not touch regularly at Morehead City on account of the roundabout way they have to take to get in and out of the harbor. With the cut in front of Morehead City extended on to the Bogue Sound Channel beyond, it would shorten the regular route of these boats and bring them to the Morehead City wharves on each run. It is stated that the extension

[1] Not printed.

would be of further advantage to these boats, as it would put them in close touch with telegraph and telephone under any weather conditions—an advantage not had at present.

(*b*) An anchorage basin is also desired, as the existing channel is only 200 feet wide at the widest point, which is along the business portion of the water front. Outside of this cut there are only about 2 feet available at mean low water, and it is necessary for those who have vessels moored in the cut to rerun their anchors at every shift of wind and tide (a difficult and dangerous proceeding when heavy southerly winds prevail), to avoid having their craft damaged by striking on the steep banks of the cut.

It is stated that with the increased depth of the new channel made by the Government there is a much stronger current passing through the harbor. The rebound from the sea wall, together with the strong current, causes a choppy sea, and the narrow channel in which the boats have to lie at anchor renders it difficult to hold the vessels from breaking loose and dragging down against the sea wall, the result of which would mean loss to boat owners and to the town, and possible loss of life. The present improvement has also attracted a longer and deeper draft vessel to the harbor, thus making an anchorage and turning harbor of greater width necessary. With the commercial development of this section which is under way, and with the construction of terminal facilities at this harbor, where inland navigation meets ocean navigation, some more adequate accommodation for the vessels in this harbor seems necessary. A turning basin suggested is to widen the present channel 200 feet from east side of Eighth Street to west side of Eleventh Street. This would give relief from a commercial standpoint and afford a harbor for marine property.

13. Existing wharves pertaining to the harbor at Morehead City number 23, located as shown by numbers on the map [1] herewith. They are all of timber construction and generally with pile foundations and plank decking. They are all private wharves, but generally open to all water carriers free of charge when not required for use of their owners. They have a frontage varying from 5 feet to 64 feet, the total frontage being about 390 feet. The height of decking above water varies from 6 feet to 9 feet, and the available depth of water at the wharves varies from 1 foot to 9 feet. Five of these wharves have buildings on or attached to them; two houses are merely pavilions, two are oyster and fish houses, and one (No. 19) is a regular freight warehouse for general merchandise. The total floor area of the last three is about 3,600 square feet. One wharf (No. 5) is equipped with track connecting wharf with store in the rear. Nine wharves are equipped with derricks for handling freight. No. 20 is a marine railway equipped with a 10-horsepower gasoline engine for hauling out boats. The wharves are used principally for boat landings in connection with fishing and oyster industries and for general merchandise. The condition of the wharves ranges from poor to fair, and of the buildings from poor to good. Nine of the wharves have railroad sidings. The Norfolk Southern Railroad approximately parallels the wharf front at from 350 to 1,000 feet distance. Improved and adequate highways have been constructed

[1] Not printed.

to 11 of the water terminals, and no highways exist to the other 12. Photographs of the wharves, with individual descriptions, accompanied my report on "Water transfer and terminal facilities, Morehead City Harbor," dated January 30, 1913.

The town of Morehead City obligated itself, as a condition precedent to the existing improvement, to construct a public wharf, and has given assurance satisfactory to the Chief of Engineers that this will be done, though the wharf has not yet been built. The city and individuals have expended about $4,500 for dredging and $40,000 in bulkhead construction in the last two years.

It is expected that the new public wharf will be completed by March 31, 1913. Existing terminal facilities are not adequate. The new wharf will be of great service, but it should be provided with storage building, mechanical devices for handling freight, and rail connection with the Norfolk Southern Railroad. If an adequate public wharf, equipped as outlined, were constructed, the terminal facilities would be considered adequate. The public terminal should be located at a street intersection, and the wharf should have a length of not less than 50 feet. The public terminal facilities outlined, if charges for their use be made reasonable by the municipality, would assist in the commercial development of the locality. Supplies and equipment for all vessels operating from Morehead City could be received by water and safely stored until called for, and agricultural produce and fish could be received for reshipment at a nominal cost for wharfage and storage.

14. In connection with the improvement proposed, there are no possibilities for the development and utilization of water power for industrial and commercial purposes.

15. It is my opinion that the improvement just completed by the Government can not be considered complete or entirely adequate to meet the needs of water transportation at this place. An anchorage basin is a necessity, and an extension of the channel to Bogue Sound would be of great benefit. The anchorage basin should be 10 feet deep, but the channel to Bogue Sound would not need to be deeper than the present improvement of the Bogue Sound Channel (3 feet deep). Without these additional improvements it is not thought that local interests will secure the benefits due them from their expenditure of funds already made in dredging and bulkhead construction and from funds which will be expended in wharf to be constructed in the near future.

16. No new survey is needed, but it is recommended that the preparation of estimates be authorized on the lines indicated.

H. W. STICKLE,
Major, Corps of Engineers.

[First indorsement.]

OFFICE OF DIVISION ENGINEER, SOUTHEAST DIVISION,
February 17, 1913.

To the CHIEF OF ENGINEERS:

1. I do not agree with the district officer that the excavation of an anchorage basin is necessary. Anchorage basins are entirely unobtainable in a great many of our harbors that are vastly more

important than this one. Where depths have to be obtained artificially by dredging, the cost of gaining them is entirely too expensive, as a rule, to resort to dredging for the purpose of providing anchorage grounds. A single vessel, in order to swing and to have out the necessary amount of chain to hold it, covers a very large area in comparison to its size. The little boats that can come to this particular harbor ought to be tied up at the wharves or accommodated in slips, which should be provided by the riparian owners.

2. I do not think that the extension of the channel to Bogue Sound is essential at this time. However, I see no objection to the district officer preparing plans and estimates of cost, if it can be done without a survey; and, indeed, with the data he has on hand, I think it could be done at a cost considerably less than $150.

DAN C. KINGMAN,
Colonel, Corps of Engineers.

[Third indorsement.]

BOARD OF ENGINEERS FOR RIVERS AND HARBORS,
April 28, 1913.

To the CHIEF OF ENGINEERS, UNITED STATES ARMY:

1. For reasons stated herein, the board concurs with the district officer in recommending that an estimate be authorized in order to determine the extent and advisability of the improvement. Separate estimates for the basin and for the channel should be given.

For the board:

LANSING H. BEACH,
Colonel, Corps of Engineers,
Senior Member Present.

SURVEY OF MOREHEAD CITY HARBOR, N. C.

WAR DEPARTMENT,
UNITED STATES ENGINEER OFFICE,
Wilmington, N. C., February 12, 1914.

From: The District Engineer Officer.
To: The Chief of Engineers, United States Army
(Through the Division Engineer).
Subject: Report of survey of harbor at Morehead City, N. C.

1. In compliance with instructions contained in department letter dated May 2, 1913, the following report of the survey of the harbor at Morehead City, N. C., with a view to extending the present project westerly to the main channel of Bogue Sound and to widening the channel in front of the wharves so as to provide a turning basin of adequate area, is submitted:

2. Since the preliminary examination report in this case was written the commercial statistics for 1912 have been compiled and are here given.

Season of navigation: Navigable the entire year.

List of vessels.

Class.	Number.	Net registered tonnage.	Passengers.	Receipts.
Sailing (American registered)	12	82	.....	.....
Gasoline (American registered)	35	488	5,300	$1,325
	47	570	5,300	1,325

Freight traffic.

INBOUND.

Articles.	Amount in customary units.		Amount in short tons.	Valuation.
Cattle	225	Head	56	$5,600.00
Clams	12,340	Bushels	617	12,340.00
Crabs, soft	56,707	Dozens	113	56,500.00
Coal	1,200	Tons	1,200	4,800.00
Crossties	23,402	Number	1,663	10,643.20
Eggs	200	Crates	5	1,200.00
Fish, fresh	67,536	Boxes	6,754	675,400.00
Fish, salt	1,558	Barrels	78	7,800.00
Fertilizer	430	Tons	430	12,900.00
Gasoline	2,806	Barrels	491	23,077.00
Grain	1,000	Bushels	25	550.00
Groceries	250	Tons	250	25,000.00
Hogs	300	Head	15	3,000.00
Horses	75	...do	25	3,500.00
Kerosene	500	Barrels	91	2,502.50
Lumber	75,000	Feet	150	1,500.00
Oysters	18,229	Bushels	729	7,290.00
Potatoes, Irish	1,100	...do	33	1,089.00
Potatoes, sweet	30,000	...do	900	27,000.00
Poultry	8,000	Head	16	3,200.00
Salt	1,221	Sacks	85	850.00
Scallops	7,211	Gallons	36	7,211.00
Watermelons	6,000	Number	60	900.00
Wood	375	Cords	375	1,500.00
			14,297	895,352.70

OUTBOUND.

Brick	30	M	75	$225.00
Cement	25	Tons	25	212.50
Coal	100	...do	100	400.00
Cottonseed hulls	7	...do	7	56.00
Cottonseed meal	8	...do	8	240.00
Dry goods	15	...do	15	11,250.00
Groceries	410	...do	410	41,000.00
Gasoline	1,000	Barrels	175	8,225.00
Grain	120	Bushels	3	66.00
Hardware	88	Tons	88	12,320.00
Hay	10	...do	10	200.00
Ice	275	...do	275	1,925.00
Kerosene	50	Barrels	9	247.50
Lime	80	...do	10	70.00
Machinery	5	Tons	5	500.00
Peanuts	140	Bushels	2	160.00
Salt	500	Sacks	35	350.00
Shingles	75	M	38	380.00
			1,290	77,827.00

RECAPITULATION.

Total outbound	.....	.....	1,290	$77,827.00
Total inbound	.....	.....	14,297	895,352.70
Total commerce	.....	.....	15,587	973,179.70

3. The above table shows an increase over the 1911 commerce of 6,568 tons; the increase in valuation being $216,755. Stated in percentage of the 1911 commerce, the tonnage increase is 72.8 per cent and the valuation increase is 28.6 per cent. The greatest increase, it will be noted, is in the item of fresh fish, amounting to 2,079 tons, valued at $207,900. A large proportion of the above increase is a direct result of the initial improvement of this harbor, though it does not measure the full value of that improvement, as the same was not completed until July, 1912.

4. In preparing the plans and estimates herein presented a survey of the locality was found necessary. The immediate charge of the survey was assigned to Assistant Engineer Harry T. Paterson, who reports as follows:

> The survey was made in November, 1913, and consisted of taking soundings over that portion of the harbor lying between the town of Morehead City and the marsh opposite, as well as that portion lying between the west end of the existing improvement and the main Bogue Sound Channel to the westward thereof. Two hydrographic base lines were laid out to cover this area, one 2,000 feet long and one 4,000 feet long. Stakes were set at 200-foot intervals, from which ranges were run at right angles to the base. Soundings were taken at 20-foot intervals on these ranges and located by measurement with a graduated wire.
>
> Shore lines, wharves, and topography were taken with the plane table using horizontal control furnished by the United States Coast and Geodetic Survey. Soundings are referred to Beaufort datum, which is the plane of reference used on the existing improvement at this harbor, and on contiguous works. This plane is 1.9 feet below mean sea level, as determined by the United States Coast and Geodetic Survey, and referenced by the bench mark of the United States Geological Survey at Pier No. 1, Morehead City. From the data given in the Tide Tables, published by the United States Coast and Geodetic Survey, it is noted that mean sea level is 1.4 feet above the plane of tropic lower low water; therefore to make the soundings conform to this plane it would be necessary to apply a correction of plus 0.5 foot. It is not believed that the plane of reference used is too low as gauges set to this datum frequently have their zeros two or three tenths out of water due to the combined effect of wind and lunar tides.

5. There are two distinct projects covered by the present investigation:

(*a*) To provide a "turning basin of adequate area."
(*b*) To extend "the present project westerly to the main channel of Bogue Sound."

At the hearing held in regard to the proposed improvement it was stated that the so-called turning basin was the more important of the two. As part of the existing improvement a portion of the channel was dredged to a width of 200 feet with the idea that this would serve as a "turning basin." There is no complaint as to the adequacy of this width for that purpose, but as this is the largest and most sheltered area of deep water available near the town, it is being used as an anchorage basin, for which purpose the width is not adequate. At this hearing it was stated that an adequate anchorage basin should have a width of not less than 400 feet. The largest vessels now using this harbor have a length of about 65 feet. Allowing 20 fathoms of chain to the anchor it would require a basin 370 feet wide to provide turning room, so that it would appear that a width of 400 feet would be adequate.

6. At first glance it would appear that the logical site for an anchorage basin would be east of Seventh Street, where the existing 200-foot channel could be widened, but this is the busiest portion of the water front and at this place additional width sufficient to provide an unobstructed channel along the wharves would have to be

provided. The location recommended is shown on the accompanying map, approximately a parallelogram in shape, extending from Seventh to Eleventh Streets. Channel entrances parallel to the long sides are provided at opposite corners. The short sides of the basin are inclined in the direction of the tidal flow with a view to securing the maximum scouring effect in order to assist in the maintenance of the depth desired. It has a width of 400 feet and a length of about 1,600 feet and is considered adequate for the needs of the community for some time to come.

7. With the basin located as shown, it would not be necessary to provide additional width for channel way as fully 80 per cent of the commerce of the harbor is handled at the wharves east of Eighth Street where a channel width of 200 feet is now, or soon will be, available. Vessels anchored in the center of the basin would swing to either side, leaving an equally direct channel for passage on the other.

8. The only entrance to the harbor at present is the one from the east, which has an available depth of 10 feet at mean low water, Beaufort datum. It is believed that the anchorage basin should have this same depth and the estimates have been made accordingly.

9. In regard to the extension of the present project westerly, it must be borne in mind that the present project calls for a depth of 10 feet, while the waterway from Beaufort Harbor to New River, with which connection would be made by this extension, has a depth of 3 feet at ordinary low water. There is a lumber mill about 1 mile, and three fish factories about 2 miles west of Morehead City which furnish a large amount of commerce, and to which points depths of 6 feet are available. There are at least eight boats that fish for these factories that draw 6 feet when loaded. They average 65 feet in length and run from 30 to 40 tons capacity, and particularly desire to use this anchorage. If the proposed channel were not made to accommodate them, they would be required to make a detour of about 2 miles to gain access to the basin. In the estimate below given I have shown the amount of material to be removed for depths of both 3 and 6 feet; though since the preliminary examination report was prepared, my opinion as to the adequacy of a 3-foot channel has undergone a change; since such a channel would accommodate only those vessels operating to the westward of Morehead City to points on Bogue Sound.

10. As the width of the entrance channel from the east, the existing project, is 100 feet, the estimates for the extension are also made for this width. This is also the width of the waterway from Beaufort Harbor to New River.

11. As stated in the preliminary examination report, the city and individuals have spent about $4,500 in dredging and $40,000 in bulkhead construction during the past two years. All of the dredging done by them lies within the limits of the proposed basin so that it may be said that they have already contributed $4,500 to this improvement. The public wharf required by the river and harbor act approved June 25, 1910, has been constructed by Morehead City. It has not proved to be adequate to the needs of existing commerce. As stated in the preliminary examination report (par. 13), this wharf should be provided with storage building, mechanical devices for handling freight, and rail connection with the Norfolk Southern Railroad. The wharf frontage should also be increased to 100 feet; that is, doubled in length.

12. In the following estimates allowance has been made for side slopes of $2\frac{1}{2}$:1 and for full payment of 1 foot overdepth dredging:

Material to be removed from basin in cubic yards, 10 feet depth	147,000
Overdepth dredging from basin, in cubic yards	13,000
Total material to be removed, in cubic yards	160,000
Unit price.....cents	12.5
Cost of dredging	$20,000
Engineering and contingencies	$2,000
Total cost of basin	$22,000
Estimated annual maintenance	$2,000

	Three feet.	Six feet.
Material, in cubic yards, to be removed from western channel	6,000	35,000
Overdepth dredging, in cubic yards	4,000	9,000
Total material to be removed, in cubic yards	10,000	44,000
Unit price.....cents	12.5	12.5
Cost of dredging	$1,250	$5,500
Engineering and contingencies	$150	$500
Total cost of western channel	$1,400	$6,000
Estimated annual maintenance	Negligible.	Negligible.
Total cost of basin with 3-foot channel	$23,400	
Total cost of basin with 6-foot channel	$28,000	
Estimated annual maintenance	$2,000	

13. Dredging work at Morehead City, as estimated for above, in common with many other shallow-depth projects in this district, is comparatively small in amount; dredges suitable for these works are not available locally, and the cost of moving dredging plants to the works, and of returning them to their headquarters, is so large that it has been found that reasonable unit prices can not be secured from bidders. Attempts to dredge the New River by contract have failed, as the prices bid were much in excess of the estimated cost of the project and of available funds. The same experience was had in the case of the Scuppernong River, harbor at Beaufort, Shallotte River, Neuse River, and harbor at Morehead City. The lowest bid for Morehead City, opened August 28, 1913, was $18\frac{3}{4}$ cents per cubic yard. It is only fair to state that in that instance the amount to be dredged at Morehead City was only 7,000 cubic yards; but being adjacent to Beaufort and near the New River, all advertised together, the bids received are indicative of probable results in future advertising. If this project be adopted, it is extremely doubtful if it could be executed by contract at the unit price estimated above. No Government plant now in this district is suitable for the work, and in connection with this project for this work I also include an estimate for the construction and equipping of a 12-inch hydraulic dredge, with a view to its purchase whether or not it be found possible to contract this particular work advantageously or not. This dredge will, if authorized, find its services in constant demand throughout the district for executing remote and small projects, and small and emergent maintenance work.

An estimate for such a dredge completely equipped for operation is submitted of $63,000.

In this connection it may be stated that it is not the intention to withdraw from contractors any work in the district which they may

be able to perform within the unit estimated cost of the project, after overhead charges are added.

14. It is proposed to deposit the excavated material from 700 to 1,000 feet southerly from the basin, in such a manner as to form a continuation of the island or marsh and extend the same westerly in a direction parallel to the proposed western channel. It is believed that this will have some tendency to direct the ebb tide through the basin and increase its scouring effect. Some of the material is desired by local parties for filling behind the sea wall, and arrangements will be made looking toward their securing this if the work should be authorized.

15. Having in mind the large increase in the commerce of this harbor and the progressive attitude of the people of Morehead City, as evidenced by their expenditure for harbor improvements, I am of the opinion that the construction of an anchorage basin as outlined on the accompanying map to a depth of 10 feet, together with the channel leading to Bogue Sound, having a depth of 6 feet, is worthy of being undertaken by the General Government, provided that, and as a condition precedent to the execution of the project, the city of Morehead should give satisfactory assurances to the Secretary of War that they will expend on or before a definite date to be fixed by him, and in accordance with plans to be approved by him, not less than $2,500 in the extension of public terminal facilities, including increasing length of wharf to 100 feet, the construction of a storage building, and mechanical devices for handling freight.

Consolidated estimate.

Anchorage basin, 10 feet	$22,000
Western channel, 6 feet	6,000
Construction of dredge	63,000
Total	91,000

The dimensions proposed for the anchorage basin are considered suitable for boats drawing 9 feet of water. The width and depth proposed for the western channel are considered suitable for boats of a maximum draft of 5.5 feet for which this channel is designed.

16. If this improvement should be ordered, funds sufficient to cover the entire cost should be provided by the initial appropriation in order that the work may be prosecuted at a rate of 35,000 cubic yards per month. The plan recommended could then be completed in six months' work.

H. W. STICKLE,
Major, Corps of Engineers.

[First indorsement.]

OFFICE DIVISION ENGINEER, SOUTHEAST DIVISION,
February 18, 1914.

To the CHIEF OF ENGINEERS:

1. In the within report on the survey the district officer estimates the cost of dredging at 12½ cents per cubic yard, based on the proposition that a dredge be constructed for this work at a cost of $63,000. The information given within also indicates that if this dredge is not constructed and the work is attempted to be done by contract

it will cost approximately 20 cents per cubic yard. This would bring the estimate of cost up to the following amounts:

For the anchorage basin	$35,000
For the western extension of 3 feet depth	2,200
For the western extension of 6 feet depth	9,600

2. In my opinion, the present and prospective benefits to commerce do not warrant the expenditure of these amounts as a whole, possibly with the exception of $2,200 for the 3-foot extension of the channel westward.

3. If the cost of the dredge is charged to this project, it will render the amount necessary to carry it out so large, in my opinion, as to again make the cost so great that the benefits to be expected do not warrant the undertaking of the project.

4. It is evident, from the statements of the district officer, that the dredge, if constructed, would be used on a great many other harbors and waterways in the district and there is no question but what such a dredge as he describes is necessary in his district. If an appropriation for constructing such a dredge for general use in the harbors and waterways of the Wilmington district can be obtained in the amount mentioned and such a dredge constructed the work within could no doubt be done for the cost estimated by the district officer, and under such conditions might be worthy of being undertaken. Under existing circumstances I must state that, in my opinion, the improvement of the harbor at Morehead City, N. C., with a view to extending the present project westerly to the main channel of Bogue Sound, and to widening the channel in front of the wharves so as to provide a turning basin of adequate area, is not worthy of being undertaken by the General Government at this time.

W. C. LANGFITT,
Colonel, Corps of Engineers.

[For Report of the Board of Engineers for Rivers and Harbors on survey, see p. 2.]

HEARING BEFORE THE BOARD OF ENGINEERS FOR RIVERS AND HARBORS IN REFERENCE TO MOREHEAD CITY, N. C.

[Act of July 25, 1912. 2 to 3 p. m., May 5, 1914.]

Col. Black, Col. Abbot, Col. Beach, Col. Newcomer, Col. Winslow, and Maj. Kutz, of the board, were present.

Congressmen John H. Small and John M. Faison, together with a delegation, including the mayor of Morehead City, appeared before the board in reference to the above.

Col. BLACK. Well, Mr. Small, we would be glad to hear from you.

Congressman FAISON. We have with us a delegation from Morehead City to-day, who have come up to ask for an investigation of the Morehead City Harbor. The city is very much interested in this project. I would like to introduce Mr. E. G. Gorham, who is mayor of the city.

Mayor GORHAM. Gentlemen, as I understand this matter, we have been up here once before, with reference to the survey of this project, and as evidence of the fact of our interest, the entire town has taken up this matter and asked these gentlemen to come up here. With reference to the dredging in front of Morehead City, I will first give you a statement of the facts with reference to this. [Reads from paper:] "Morehead City, which is quite a young town, in which development is fast becoming material and interesting to the whole section." We are not a political town. We have very little interest in politics. From the standpoint of going to the Government for things,

we have never been before you for anything whatever, and Morehead City has been penned up from the actual needs of commerce only. The city has spent over $45,000 with reference to this project, and we think that should weigh materially with you gentlemen, in knowing that we know what we want and that we are materially interested in what we want, and it is not the purpose of this delegation to come and ask for something to form an anchorage basin for a city, when the boats could be put out elsewhere to anchor, or any such project as that, but is of material interest from the actual needs of commerce. What we have done has been demonstrated to have been worthy and a necessity, by evidence of the fact that the harbor now provided is inadequate. You have spent $19,000 within the past two years, in assisting us, and the city now has a report from Maj. Stickle. He says now that our dock facilities are not adequate for the commerce now there. Morehead City is able to meet the Government with any project to take care of the business. We will never ask for anything for nothing, and we have spent twice as much as you have given us.

Col. WINSLOW. In what way have you spent the money?

Mayor GORHAM. We spent about $4,000 in dredging, which is directly benefiting to the Government.

Col. WINSLOW. Dredging the channel?

Mayor GORHAM. Dredging in the channel. We continued your channel for 600 feet. The project gave out for your $19,000 item—gave out about 300 feet to the east, where we had built a city dock. We have spent $1,200 to $2,000 on a city dock and got ground there to build it, and when your project came to it, it fell short there; so rather than be handicapped we went ahead and finished the dredging and went 350 feet west of the city dock, and by private subscription of the town and the town assisting in the matter. It was the town's fund, but it was expanded by private subscriptions as well. [Continued reading from paper.] "We think that is very important, gentlemen, because while being a small town, we believe that we have got a town that is going to be a city, and the traffic is increasing; the town has doubled in its population within 10 years, and those reasons should bear a good deal of weight in the minds of the board of what it practically needs at the present time." The project in question as now completed reminds me of a party who wanted a frying pan and was given only a handle. That is an outline of the project. We asked for a handle, up to our docks, and then a basin, like a frying pan. Now, we have got the handle, but we haven't got the pan and it is absolutely necessary. There is but only one narrow outlet to our harbor and the majority of the business handled at the wharves is 1 mile from the mouth of this cut. It is, therefore, necessary that 9 out of 10 boats that enter must pass all other boats within the harbor.

Now, if we are assured of the fact that no other boats are going to come into our cut when another boat wants to turn around, why, I would say that the proposition as it is is adequate, but where our entire traffic comes through a 100-foot cut up into this basin, which increases to 200 feet, and in the average business hours of the day there are two or three boats coming up in that cut and each one of those boats must reverse itself, it necessarily blocks the traffic that comes in, and I have tried to turn around in there six times and I have never yet made a turn but what we have had trouble, because boats coming up this narrow cut do not have sufficient width to turn and pass a boat that is going up. Therefore, the boat that is going up the cut must either stop or else the boat that wants to turn can't turn, and so it is absolutely essential that they at least have room in the basin to make that turn so that the boats—for accident and safety. If reason "A" were true, then we would not be here to-day, but the fact is that the basin as now provided does not provide adequately for turning and commerce. Within the last few months one of your Government boats came into the dock for the purpose of taking on water, and in attempting to turn got upon the shoal. All of the vessels, coming to stay even for a few days in the main channel, want to get coal or water, and the only way that they can get it is either to go to Morehead or Beaufort, and they can't go to Beaufort, so they are attempting to come into Morehead, and they can not turn around there. Within the last few days a boat paid an enormous sum for lighterage for water and coal, which by a little widening of the basin, giving them plenty of area to turn, would be of material benefit. Many vessels are now employing small boats to carry to the main channel water and coal. [Continued reading.] "That I consider important. It is a daily affair to see the average class of boat now used having trouble in turning on account of the traffic coming in, and to go out of the harbor the boats used having trouble to turn, and it takes up the entire harbor for the average class of boat to turn it, and if a boat is coming up the cut, which is the case 9 times out of 10, it always causes congestion, delay, or accidents. I have seen boats lay at the dock for some 30 minutes attempting to leave the dock, making it safe, some of the large boats making it safe for them to turn because

the average draft of boat we use probably draws 4 to 5 feet, and there is a vast number of those boats; having only one outlet, each boat that enters the harbor must necessarily make the turn within that cut. That seems to me to be the milk within the cocoanut. I have attempted to go over it within the last 60 days a half a dozen times, and yet I have seen boats have trouble and have had trouble myself.

"While anchorage is a very important matter we assure you that we do not believe the Government should construct an artificial basin for such purposes, but in our opinion believe that the widening of the basin to 400 feet is an absolute necessity. The connection of the channel of Bogue Sound is essential in that all of the traffic from the west is required to go at least 3 miles out of the way to reach our wharves and this cut would help the congestion of the traffic before the docks. I am referring to connecting the pan to the west, which is only a small matter, and which I think would in the future lessen the whole congestion of traffic in the basin by having the water outlet, because then the boats all going west won't have to turn in the harbor. A freight line running from Swansboro to Newbern has refused to make these extra 3 miles of run into our harbor. Coming from Swansboro you have to run, going east, parallel with this map, between the harbor and the main channel 1¼ miles to 2 miles, depending upon what point in Morehead you are coming from, and then you come back and retrace your steps into Morehead 1¼ to 2 miles, taking the average boat at least 3 to 4 miles out of the way to get where this connection of this cut will put them within 500 yards. The boats from Swansboro, the lumber boats and different vessels of importance, desire to come in to the west to reach our docks for water, coal, and otherwise, as well as the freight boats, none of which attempt it, for the present run of 3 miles to the end of the basin, coming up and then turning in the basin and getting out and reversing the steps 3 miles back. You are taking at least 3 to 6 miles out of the way run.

"As all the growth of commerce will demand this connection, it would be wise to have it done even from an experimental standpoint, as the cost is very small, considering the benefits and if in future years it was not justified, by a heavy cost of maintenance, then it would be up to us for your further consideration to connect what we have. The natural trend of business is bound to open that west cut. If you don't do it I think the town will. That is a matter of fact, but we feel that the Government should do it, and as the future business, with the town situated as it is, is going to come by the docks of the city, the money spent there for that connection and the widening of that harbor in front of Morehead is in a degree permanent money for any future improvement with the channel west toward Swansboro. Therefore, we would ask that you do not spend any money for the channel beyond that marsh under any event, because the business near Morehead, swinging by the docks, depends upon this cut from the west. All of the lumber mills—we have had within the last 60 days—I know of three enormous lumber mills that are looking over sites to the west to open up mills and find factory sites and everything else. If this cut is continued out to the west it means the entire matter for these mills. It will open up all of this land adjacent to the water and for future years will be something permanent and will be demanded by the traffic, and as evidenced by our past growth I think it is just coming to a question of time when somebody has got to make that cut, and now very quickly, and therefore we ask you to consider that very carefully. I consider it a mistake to attempt to build a dredge and charge the cost to this project. The report that has been filed with you has asked to build a dredge for $63,000 or $65,000, with reference to this project. I think that is a very great mistake to do that, because they stated in the report it was probable you couldn't get a dredge to move from some other section and go there because the cost of moving would be as much as a third of the cost of the work, when as a matter of fact you got a small dredge that has done some work in the channel there, right lately, which is doing the work at 10½ cents and he would be more than glad to do this work for less than 12½ cents. The work that he is doing there for the maintenance money we got he is now doing for 10½ cents and why shouldn't we be able to get it done for less than 12½ cents? I personally know of other dredges that would bid on it for that; therefore, it seems to me to be especially out of the question to build a dredge and charge it to this small project, with reference to this particular cut."

Another point that I would like to state is the project of Beaufort and the project of Morehead. While, upon their face they appear just alike, and it has been stated that probably Morehead and probably Beaufort want the Government to construct them a water front that would be sufficient to maintain the entire business of the section and the towns just opposite, that is not the case, for these reasons: First, although just across the river from each other, we do not depend upon the same class of trade. Beaufort is operated or its financial backing is mostly from fish factories, which are situated from 3 to 5 miles on the east and west side of Beaufort. The ma-

ority of its trade goes to these factories and unload the fish and then run into Beaufort Harbor. While our proposition is that our trade is what is known as the fresh-fish shipping for the main business, and those fresh-fish shippers are located on this cut, and within the last 60 days a $100,000 fish company has opened up on this cut. So the demand of the traffic is going to be greater and, not reflecting on Beaufort's cut, we would be glad to see you give everything that you can to the Beaufort project, but it is a project separate and distinct upon its own merits. Now, as a fact, the majority of the boats in front of Beaufort anchor in their harbor and in front of our town; where this cut is, a majority of the boats anchor to the west of this cut, either out in the channel or the lighter draft boats in the cut below. There is some degree of a shoal on their cut to the west that is used as an anchorage basin by the average boat, and therefore I consider that these projects, while they appear upon their face as exactly the same, yet they are entirely different, as a matter of fact. I don't know that I have anything other, personally, that I could state. Probably Mr. David—Mr. Canfield, I believe, desires to address you.

Mr. CANFIELD. I have just a few figures here. I haven't got the trend of what the other gentleman said, so that I don't know that I can corroborate his statements. I have a prospective list here and an actual list of the commerce passing through Morehead City Harbor in 1913. You will note here that there is double the commerce since the last cut was made, extending from what is known as the Black Buoy in the Beaufort Harbor to our city dock. While that cut was not made as originally planned, on account of the appropriation giving out, I believe the commerce in Morehead City Harbor has doubled in 1913 over what it was in 1912. I have brought both figures here. The report from Maj. Stickle—the report that I understand was given to the Government man, Mr. Perry, who got up the statistics there at Morehead City, his 1913 report which will come out this year—shows that the commerce there has practically doubled. In 1913 the total ingoing and outgoing tonnage was 895,000, against 1,854 incoming in 1914. I have no figures of the outgoing freight, as he did not seem to take into consideration that part of it in making up his report, and I have figured the prospective freight, in the event that that harbor was opened up, coming from the west. Morehead City is very much interested in water transportation. We are the nearest seaport on the inland waterway. We are the nearest seaport to Cape Lookout. We are the nearest seaport to coastwise shipping, and we believe there is a great future for Morehead City to the extent—while we are a small town, only valued at less than a million dollars, we have spent about $40,000 ourselves in the improvement of our harbor, in the interest of water transportation. In other words, we have put $2 in our waterway to every dollar we have asked the Government for thus far. We got an appropriation for $19,000 and we put in, in round figures, $40,000 in harbor improvement. In other words, when we got the appropriation, it didn't go as far as we would like to have had it, and we put about $5,000 to extend that cut farther on. We are not up here asking for everything. We are willing to do our part.

Now, I understand from the report that the cost of a dredge has been added to this project. I don't know the object. Perhaps a dredge in that section would be a good thing. There is a great deal of work that requires maintenance in that section. It may be a good thing; but we do not feel that this project should stand the whole cost of a dredge or anything of that kind. I don't think you gentlemen would consider it so, but we would like very much if you gentlemen could see your way clear to favor this project; and we do not feel that a dredge is necessary. While we have no objection to that whatever, Maj. Stickle thinks it is necessary; but we know that there are dredges in that section. There has recently been a dredge bought and brought down there for this proposition. I think it is a 16-inch dredge, and a project of that kind it can handle very nicely. We have, at the present time, a new boat line that has started to Newbern. The representative was in Morehead City this past week; and I am in the lumber business, and he was trying to find out about what amount of business he would be able to get out of Morehead City. He states that his boat is 165 feet long, running from Baltimore to Newbern. The widest part of our cut is only 200 feet wide. It will not be necessary for me to explain to you gentlemen what sort of a difficulty that party would be in in trying to turn it around in a 200-foot cut, drawing 8 or 9 feet of water. It is practically impossible. And considering the amount of commerce and the advantage that has been taken of the cut already made—and I am certain that the commerce in Morehead City Harbor will double with the cut we are asking for, so that the boats coming down from the west can come down through there—it shortens the distance a half mile. I don't know that there is anything more I can say. If there are any questions you gentlemen would like to ask me, I would undertake to answer them.

Col. WINSLOW. Could you give me any idea as to how that $40,000 was distributed; how much for the dredging, sea wall, and dock?

Mr. CANFIELD. Well, it is only to the extent of, approximately—in dock—$1,000. I think that would be figured at that. That was the extent of the dock. I should say $30,000 for the sea wall, which is all concreted up above the water line. Then we had considerable work to do—in other words, the railroad company wanted to stop at a certain point and said that they would take care of that, which they failed to do—and we had to build a wooden dock, which we have concreted well above the low-water point; and I should judge, I am not certain, but it seems to me there was somewhere around $7,000 spent in extra dredging. I am not certain in regard to those figures.

Maj. KUTZ. The report says $5,000 for dredging.

Mr. CANFIELD. As I said, I am not certain about that. Since that report has been made we have had individual parties that have had work done there—since this report that Maj. Stickle made. The marine railway is built there, and the party that owns * * * hired a gentleman to do the excavation there.

Mayor GORHAM. With reference to the cost of that cut, the town already owned the land, and didn't have to buy that?

Col. NEWCOMER. There is one point about that west cut. You see this map? You spoke about that developing all this land. That would be quite a distance away.

Mayor GORHAM. Here is where the channel comes toward the land, and right here—that will be right at the natural channel, and if they connect this on out here—here is where the 4 feet begins—the wharf would probably come to here, and here is your main channel.

Col. NEWCOMER. You would expect to build long wharves?

Mayor GORHAM. Oh, yes. We built all those long wharves—to 4 feet of water.

Mr. CANFIELD. One of those fish houses was originally built in from 3 to 6 feet of water—built on piling and filled in.

Mayor GORHAM. This enterprise, situated anywhere along here, to go here, is 5 feet of water, could go right into the city here, which now it has to go out through here, around here, and into here. That shows the beginning of your cut, but to make the curve around that cut you have got to come out to the Black Buoy and the position of * * * a mile run; if you are coming from Swansboro you have to run from here and parallel yourself back to here and from here to here would be at least $1\frac{1}{4}$ miles.

Col. NEWCOMER. These boats, now, I suppose, go to Beaufort.

Mayor GORHAM. No, sir. A great many of these boats don't touch either one. They run on up to Newbern.

Col. NEWCOMER. That is their destination.

Mr. CANFIELD. There is no possibility of getting any facility there at the present time.

Mayor GORHAM. The average boat that can get in here does now. But the turning is the main thing—the trouble of turning in the basin. The boats that would come to the west they are not 160 feet long.

Capt. WEBER. They are moderate size.

Mayor GORHAM. One hundred and sixty-five feet are a little longer than we have usually in the channel. I don't want to state anything but facts—just exactly what is true. The average boat, I should consider, is 75 to 100 feet. The factory boats and the average gasoline boat would run from 25 to 50 feet.

Col. WINSLOW. They run to Newbern now, instead of to Morehead?

Mr. CANFIELD. No; instead of coming to Morehead they make trips to Swansboro and that section. They carry lumber and frieght and they don't touch Morehead at all. They run from Swansboro to Newbern but they don't go into Morehead.

Col. NEWCOMER. What advantage would it be to you to have them come in there?

Mr. CANFIELD. It would give us all the freight for the Norfolk boats.

Col. NEWCOMER. You could send freight by them to connect with Norfolk?

Mr. CANFIELD. Yes, sir. We could put in a boat here. We could watch when this boat was coming along and send it out and transfer in the channel.

Col. WINSLOW. You haven't enough business to occupy one boat?

Mayor GORHAM. No, sir. They have one boat running now between there, and it runs there and to Beaufort also. It takes in both towns. But any of those average boats have trouble in turning. If you gentlemen can guarantee us that no other boat wants to come in there when another boat wants to turn, we have adequate facilities. There is usually more than one coming and even with one turning it makes it bad and dangerous.

Mr. CANFIELD. But a boat 100 feet long, with the tide running, which it is at all times in that channel, it is practically an impossibility to turn it around.

Col. WINSLOW. It usually helps a boat in turning.

Mr. CANFIELD. I have seen a boat maneuver for a half an hour and not get turned around. If you have a little breeze, it all depends which way you want to go and which way the wind is blowing. I have a little statement which I made that I want to correct. In regard to the half mile distance necessary for going by Morehead City and then going around the other way. I just heard Mr. Gorham make the statement that it would be practically 2 miles nearer to come down. That half mile had reference—in regard to going into Morehead City proper, directly around from Swansboro to Newbern, going around there here, than it would to go out around the channel.

Mayor GORHAM. I would state that it does not appear to me to be plausible for the boats running up in a narrow cut to attempt to watch out for boats that are turning to cut off its engine with the tide sweeping that boat on or against it, for those boats to cut off their engine—to watch out for the boats that are coming. If they would do that the average boat would lose 30 minutes' time in attempting to turn.

Col. WINSLOW. Does it take 30 minutes to pass?

Col. NEWCOMER. * * * In the city of Washington they have to do that * * *.

Mayor GORHAM. But this is quite different from ours, I think. I am thinking about the liners, and when they go in they have got to have quite a big harbor, too. But for the ordinary dispatch of commerce the big liners are not so numerous as our small boats. If they were, they would block traffic. The small boat is the predominating feature, and the average turning there; every boat that comes up in that slough is bound to make a turn, and go out that same point, and it always causes delay and always is dangerous from every standpoint, and I have seen very near serious accidents within the past 60 days with reference to the turning.

Congressman SMALL. Gentlemen, I will ask your indulgence just for a brief statement. These gentlemen have presented this proposition, I think, with unusual intelligence, and what I may say will be largely cumulative. To my mind, a crude picture, as the town and the water front present themselves to me, might be helpful. Morehead City is on the north side of this Bogue Sound, Bogue Sound fronting it on the south. There is an island or marsh which separates the present main channel for vessels operating from Bogue Sound on the south to the main harbor, Beaufort Harbor or Bay, thence northwardly through this canal you have provided connecting Beaufort Harbor with Neuse River.

The channel which was constructed under a project formally authorized and appropriated for extending from the eastward from this main Beaufort Harbor, as it is called, or Bay, separating Morehead City and Beaufort, up westwardly in front of Beaufort. Part of it is 100 feet wide and part 200 feet wide. Now, the proposition, as I understand it, is to widen this harbor or this channel in front of Morehead City from 200 or 100 feet, respectively, to 400 feet and then form a channel leading from the western end of the present channel westward toward Bogue Sound, the main channel, that channel being 6 feet deep. That is the report of Maj. Stickle, the district engineer, and, as I see from the report, the division engineer expresses some doubt as to the advisability of this project because, perhaps, the amount of commerce and the public necessity do not justify it; so it is a question now whether the amount of commerce and the public necessity do warrant a favorable report here, and this appropriation. There is one fact that I want to present to you, and that is that the commerce here is growing. From 1911 to 1912 it had grown 6,568 tons, with a valuation of $216,755, or an increase of 72 per cent in tonnage and 28 per cent in valuation, and the figures presented by Mr. Canfield regarding 1913, of which you have had no official report yet, will show a still greater increase; so that instead of being 72 per cent, it will be double that of 1911, and there is no reason to believe that this increase of commerce will not continue normally. All the conditions of business and of industry, and particularly of the public spirit of the community, indicate a continued increase.

While, upon the question of commerce, as it appears from the report of Maj. Stickle, and which I think ought to be emphasized, in this form of project, the improvement of this channel leading from Beaufort Harbor or the bay there westwardly in front of Morehead, the Government expended about $19,000. This town, with a population of a little less than 3,000, spent $40,000 in the construction of bulkheads in front of the town and as the appropriation by the Government in dredging this channel did not go as far as the engineer had intended it should go, they spent $4,500 more in further dredging this channel westwardly about 600 feet, as I recall. They have even gone further and made the beginning of a municipal terminal or dock, which has not yet been completed. So that you have the combination of circumstances of local circumstances, of a community which has already invested $44,500 to the Government's $19,000, and which community, through its mayor and citizens to-day express the willingness to do whatever you think, in your wisdom, they ought to do in order for the proper utilization of this improvement, if you shall authorize it.

One of the difficulties, and the handicap in making these improvements, lies in the fact that frequently, after improvements are made, which are apparently necessary, communities and sections do not take the proper steps on their part to utilize the channel and to build up a commerce, but here you have an existing commerce and a growing commerce and a disposition exemplified by their past record, which I think will lead fairly to the inference that whatever you do will be availed of by this community, in the building up and increasing of their commerce.

Now, I am not an expert as to what channel will be required but it seems to me, even as a layman, with the tide running, with a somewhat exposed front, because Bogue Sound is a couple of miles fronting Morehead City, and with the winds in certain directions, coming directly from Beaufort Inlet, with this combination of tide and sea, with the numerous boats which ply in and out, 200 feet in width—it is only that for a part of the distance—makes a condition which is a serious handicap to the handling of their vessels in front of this progressive town, and it does seem to me that they are entitled to a greater width there, and in that connection it must be remembered that the channel coming from the westward in front of the town finds a terminus. Shipping can't go beyond that and that brings me to the necessity of this channel leading from the western end of the present channel, still further westwardly, to the main channel of Bogue Sound. Now, while the necessity of that creek—vessels plying, coming up Bogue Sound or down it, if it may be so called, but anyway, coming from Bogue Sound eastwardly toward Morehead City, have to go around the points or shoals in the bay or harbor and then turn around westwardly and come into this channel in front of Beaufort, increasing the distance 3 miles. Of course, it may be said that these boats ought to be willing to make that detour and come in. The result of it is these people are deprived of the opportunity of having this stop not only for the local benefit it would be to the town for the purchase of supplies, but for the taking on of freight which they might desire to send to Norfolk or Newbern or other points, and that constitutes the two improvements which these people desire—the widening of this channel in front of the town, not alone for the purpose of anchorage, but for the purpose of greater facilities in the handling of vessels.

Now, Mr. Canfield spoke of this steamer 165 feet long, which is contemplating touching at Morehead City. I think it is the same steamer that is now running from Newbern, touching at Washington and Elizabeth City and bound for Baltimore, and if they can get in there they will certainly find some freight and it is apparent that they desire to do so, and it must be apparent that a boat 165 feet long with a channel only 200 feet wide at certain parts and with this combination of tide and wind and sea, they will have to back in or come in by bow and back out, and that they will not have sufficient facilities for turning around unless the current should be favorable and other conditions favorable, and even then they might need artificial help, and while that steamer is exceptionally large, but the average—yet, here is a concrete condition presented where they do wish to utilize this harbor and to touch at Morehead City. Maj. Stickle, in his report, makes a recommendation on page 4 and at the bottom of page 5 with reference to wharves or terminals. It seems that these people have already provided themselves with a wharf. Maj. Stickle says that his recommendation is based upon the condition that these people enlarge their terminal from 50 to 100 feet in length; that they provide a warehouse and facilities for loading and unloading and also provide physical connection by rail between the water terminal and the Norfolk & Southern Railway.

I have no authority to speak for these people, but if I were a citizen of Morehead I would not only not object to that, but I would welcome it, because it is necessary for the proper development of their commerce, and speaking merely for myself, I think it is a proper condition. I think they need it and in connection with that there comes into my mind just this other suggestion. The lower part of this water front—that is, the extreme eastern part of the water front—a part area is owned by the railroad company, then comes private docks and warehouses, most of them ample to accommodate the business of the individual owners, but they are all individually owned and occupied and used, and if the business of the town, the commercial business, is to grow and additional water front added, and if this municipal water front is to be properly utilized, then there must be an extension of the water front westward and the extension of this channel from the present channel would give them that opportunity, and although apparently it will pass some little distance, as shown by the map, from the proposed channel, yet I understand them to realize that, and if not, I would suggest that they do realize it that it is the duty of the riparian owner or of the municipality, as the case may be, to either excavate out to the channel which you construct or to build these open piers or these solid piers out to it, and I think they realize that they are not expecting the United States to excavate all the bottom, from the present front out to the channel, but only to give this channel of the width as recommended by the district

engineer, and for those reasons which I have presented, in a simple way, it seems to me that the recommendations of Maj. Stickle are meritorious and that both from the standpoint of commerce and of the future of this community that it is worthy of your approval.

Mr. CANFIELD. There is just one statement I would like to make. Morehead City has already spent about $40,000 in the interest of her harbor improvements, and I don't think there has a dollar been spent that she regrets, and we stand ready and willing to do our part in improving our water front and our waterways in that section.

Col. BLACK. Gentlemen, the time is about out.

Mayor GORHAM. The project of connecting Bogue Sound to the west does not appear to me just right altogether, but from the standpoint that you don't think favorably of widening the channel, for the reasons shown to you, anyway give us a water connection so it will assist us keeping the congestion out of what we have.

Congressman FAISON. I would like to ask you gentlemen if it would be possible to separate this cost of the increasing of this harbor, in cutting that waterway westward, from the building of a dredge at a cost of $63,000. Would it be necessary for the Government to build that dredge in order that this might be done? Why couldn't that feature be taken out and simply give us the funds for widening the basin and digging this westward channel? It seems to me that with the large amount—$93,000 there—in view of the fact that the city has done so well, and that $30,000 would bring it up to about an average where the town would be spending half, its interest in this, and in view of the increase of the commerce there, that in a short time the commerce would be such that it seems to me like it would be an absolute necessity to have this wider channel. I thank you very much for giving us an audience.

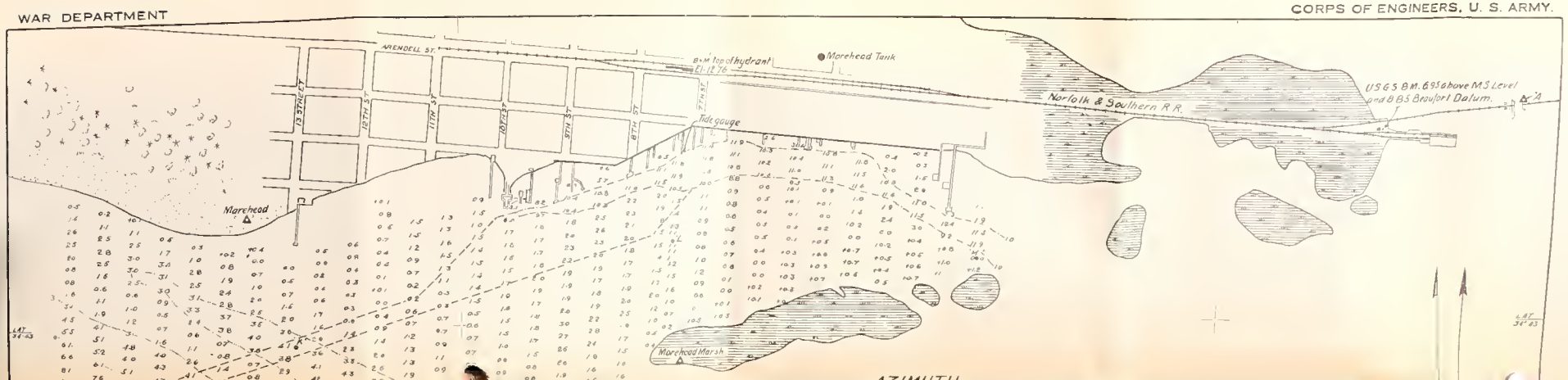
Col. BLACK. We are very glad to have heard from you, and will give very close consideration to everything that you have said.

Congressman SMALL. Thank you, gentlemen.

○

WAR DEPARTMENT

CORPS OF ENGINEERS, U. S. ARMY.



AZIMUTH

Station "C" Beaufort Harbor:	C & G.S. Sta Money	76°	42'	21"
	Sta "A" Bft. Hbr Survey	178	04	31
	" Morehead Marsh	118	28	51
	Morehead City Tank	136	36	31
Sta Money - C & G.S:	Sta "C" Bft Hbr Survey	256	42	21
	" Morehead	178	01	11
	Morehead Marsh	207	39	31
	"A" Bft Harbor	230	31	16
	Morehead City Tank	206	58	26
Sta Morehead Marsh	C. & G.S. Money	87	39	31
	Sta Morehead	108	28	21
	Morhead City Tank	205	08	21
	Sta "C"	298	28	51
	" "A"	253	04	31
Sta Morehead	Morehead Marsh	288	28	21
	C.& G.S. Sta Money	358	00	21
	Sta "C"	295	17	51
	Morehead City Tank	255	07	21
	Magnetic North	176	26	00

AZIMUTH OF HYDRO. BASE POINTS

Sta Money to "M"		218° 51"
	to "L"	203-54
	to "K"	180-04
Sta Morehead Marsh to "K"		92-58
Sta Morehead to "M"		273-18
	"L"	273-35

DISTANCE

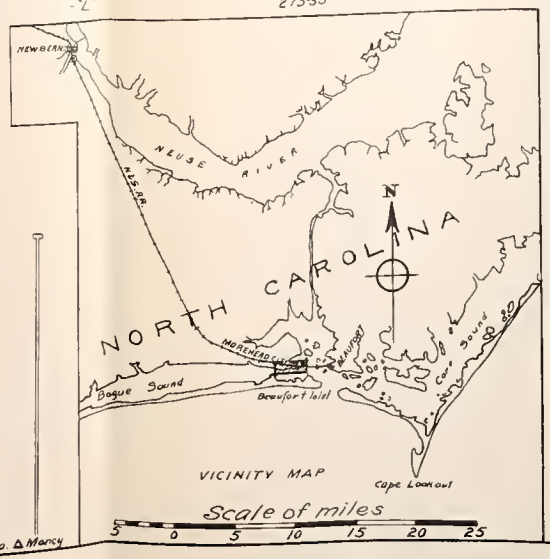
Station "C" of Beaufort Harbor Survey to C & G.S. Station Money = 8502.6 Ft.

DISCRIPTIONS

C. & G.S. Sta Money, concrete monument marked "C & G.S"
Sta Morehead is a concrete monument marked U.S.E.D. 1913.
" Morehead Marsh is a concrete monument marked U.S.E.D. 1913
"C" of the Beaufort Harbor Survey is a galvanized iron pipe driven at the edge of marsh and extending 18" above the surface
Sta "A" of the Beaufort Harbor survey is a galvanized iron pipe in the framing of the east pier of the Morehead drawbridge on the north side of track. Bench mark of the U.S.G.S. is a bronze cap on an iron pipe flush with the ground, 8.3 ft. east of old station building N & S R.R. at Morehead City and 56 ft north of north rail.

VERTICAL CONTROL

Soundings are referred to Beaufort Datum, 1.9 ft below Mean Sea Level at Morehead City, as established by the Coast and Geodetic Survey



For immediate vicinity see Coast Chart 420

Sta. △ Marsh

Magnetic variation 1913 - 3° 34'

HARBOR AT MOREHEAD CITY

SURVEYED UNDER THE DIRECTION OF MAJOR H. W. STICKLE,
CORPS OF ENGINEERS, U. S. ARMY,
HARRY T. PATERSON ASST ENGR
NOVEMBER 1913

FIELD WORK BY
N. M. CHIVERS, JUN. ENGR
T. J. HEWETT, INSPECTOR.

OFFICE WORK
N. M. CHIVERS, JUN. ENGR.
T. J. HEWETT, INSPECTOR
A. VON SILLER, JUN. ENGR.

Scale of feet
1000 0 1000 2000

U. S. ENGINEER OFFICE, WILMINGTON, N. C.
FORWARDED TO THE CHIEF OF ENGINEERS, U. S. ARMY.
WITH REPORT OF FEB 18, 1914

H. W. Stickle
MAJOR, CORPS OF ENGINEERS, U. S. ARMY

House Doc. No. 1022; 63d Cong., 2d Sess.